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NavMed 369 RESTRICTED

NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

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Vol. 6 Friday, August 3, 1945 No. 3

TABLE OF CONTENTS

Form Letters:

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Respiratory Hazards Incident to Fire and Explosions under Combat Conditions in Naval Vessels: Fires in naval vessels produced by explosives, incendiaries or other causes create an extremely important problem. No two

fires are alike. The products of combustion depend on the range and intensity of the fire, and on the nature and influence of the environmental conditions. A significant factor with respect to the composition of the gaseous components is the degree of completeness of combustion. The Fire Fighting Manual, BuShips, 1943, Page 87, classifies fires as follows:

(a) Class A fires are fires involving ordinary combustible materials (such as bedding, clothing, wood, canvas, rope, paper, etc.) and for which the cooling effect of quantities of water or of agents containing large percentages of water is of first importance for extinguishment.

(b) Class B fires are fires involving inflammable liquids (such as gasoline, oils, grease, paint, turpentine and others) and for which a smothering or blanketing effect is essential for extinguishment.

(c) Class C fires are fires involving electrical equipment, where the use of a "nonconducting" extinguishing agent is of first importance.

In addition, and particularly under combat conditions, disastrous fires may be caused by the explosion and burning of munitions, such as TNT, smokeless powder, cordite, etc. The hazards from incendiaries such as the Napalm fire bomb must also be reckoned with. It will, therefore, be noted that any combination of smokes may be produced.

The chief respiratory hazards are anoxia and the presence of carbon monoxide, nitrous fumes and carbon particles. The cause of death, aside from blast, heat and direct flame, is usually one or more of these factors.

Protection: The Navy oxygen rescue breathing apparatus is supplied by the Bureau of Ships for complete protection against smoke. The question may be raised as to the protective value of the standard Navy service gas mask if the rescue breathing apparatus is not available. The following is quoted from the Fire Fighting Manual, BuShips, 1943, Page 64, pertaining to this aspect:

"The Navy service gas mask has a canister which is worn on the back of the neck and is attached to the face piece by two breathing tubes. It has been successfully used during emergencies in smoke-filled compartments or for entry into such a compartment to close a valve or to perform some similar task that can be performed quickly. Caution: The canister of the Navy service gas mask, which is designed to protect the respiratory system of the wearer against the effects of war gases, will provide only limited protection against smoke. The duration of protection is dependent upon the type of smoke and its concentration. The canister 'does not generate oxygen' but filters smoke and many of the gases out of the air as it passes through the

canister. Therefore, the service gas mask should not be used in air containing less than 16 per cent of oxygen or in air having heavy concentrations of smoke from oil fires, except for very short periods of time. In every case that the smoke penetrates the gas mask, a new canister should be provided for further use."

The chief responsibility of the medical officer in relation to the smoke problem under discussion is to be organized for resuscitation of casualties; that is, to assure ready provision of equipment for administration of oxygen with or without the application of artificial respiration. For an extended discussion of this type of therapy consult the article which follows entitled: "Administration of Oxygen in the Treatment of Smoke Casualties".

The treatment of poisoning from carbon monoxide and nitrous fumes is presented in the following BuMed publication: "Treatment of Casualties from Chemical Warfare Agents", NavMed 220, Section IX, 1944, Pages 45-47. (Res. Div., BuMed - E. W. Brown and J. Basman)

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Administration of Oxygen in the Treatment of Smoke Casualties: Following exposure to high concentrations of smoke, men may require oxygen therapy and resuscitative procedures. If the patient is breathing, anoxia may be relieved by the use of an inhalator which is an apparatus for facilitating the inhalation of a gas. If the man is not breathing, artificial respiration must be applied. This may be accomplished by manual artificial respiration, with or without the use of an inhalator, or by use of a mechanical resuscitator. Mechanical resuscitators supply oxygen under positive pressure which provides energy for inflation of the lungs. Inhalators merely furnish a continuous supply of oxygen and the energy for pulmonary ventilation must be supplied by voluntary respiration or by manual artificial respiration.

Anoxia resulting from fire and explosion may be a combination of several types. Anoxic anoxia develops when the oxygen supply to the blood is cut off. This may occur in confined spaces due to a deficiency of oxygen in the air. Irritants may also produce this type of anoxia by causing laryngospasm or pulmonary edema. Smoke may contain toxic gases, such as carbon monoxide, oxides of nitrogen, phosgene, hydrocyanic acid, ammonia, sulphur compounds and various hydrocarbons. These may produce anoxic anoxia, anemic anoxia (by combining with hemoglobin and reducing the oxygen capacity of the blood), or histotoxic anoxia (by interfering with the respiratory enzyme systems of the tissue cells).

Increasing the concentration of oxygen in the inspired gas helps to compensate for decreased flow through a partially obstructed respiratory passage.

The increased partial pressure of oxygen facilitates the transfer of this gas through altered pulmonary membranes and favors tissue respiration when this function is depressed. The increased partial pressure of oxygen also favors dissociation of complexes of hemoglobin and gases other than oxygen, such as carbon monoxide hemoglobin, in accordance with the mass action law.

A mixture consisting of 95 per cent oxygen and 5 per cent carbon dioxide is frequently employed in treating smoke casualties. However, the major benefit is derived from the oxygen contained in the mixture; the use of carbon dioxide is not essential although it may offer some theoretical advantage. Dissociation of gases combined with hemoglobin may be slightly accelerated by carbon dioxide, but this effect is small in comparison with the exchange resulting from high partial pressures of oxygen. Carbon dioxide is normally a respiratory stimulant, but since it is a metabolic product, it tends to accumulate in the body during respiratory depression. When carbon dioxide accumulates in excess of physiological values, it depresses the respiratory centers. It is doubtful whether a possible marginal advantage gained by its use can be justified when problems of supply are considered.

It is suggested that inhalator devices be made available in the sick bay. Preparation in advance can pay large dividends in the event of an emergency. A satisfactory inhalator assembly is listed in the Medical Supply Catalog under S6-590, Inhalator, complete with two regulators (one for oxygen and one for helium-oxygen mixture) and one oro-nasal mask. Originally designed for administration of oxygen and/or oxygen-helium mixtures, it is currently available and may be used without the helium. Both the oxygen and the helium-oxygen regulators are calibrated for oxygen and may be utilized separately for administration of pure oxygen by discarding the "Y" connector and attaching a mask directly to each regulator. The nasal mask is listed under Stock No. S4-235 and the oro-nasal mask under S4-236. In ordering nasal masks it is necessary to request also the bag (S4-011) and the discs (S4-137) to obtain a complete assembly. Connecting tubing should be ordered under Stock No. S4-553 or tubing may be improvised from materials on hand. Requisitions for nasal masks should state also that the connector is desired for attaching together the bag, mask and discs. This latter item has no stock number at present.

A simple apparatus for administration of pure oxygen can be assembled from Item S6-591, inhalator regulator and flow meter and S4-235 or S4-236 masks with accessories as indicated above. All items can be used with standard commercial oxygen cylinders (220 cu. ft.) and with any size cylinder equipped with the standard thread for oxygen nut and nipple connector.

Various resuscitator-inhalator units are now under consideration by the Bureau of Medicine and Surgery. The models tested to date are designed to serve as many as four men simultaneously. One resuscitator-inhalator unit

has been accepted, and when this device becomes available, notice will be given in the Bumed News Letter. (Nav. Med. Res. Inst., Bethesda, Md. - B. G. King and D. E. Goldman)

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Penicillin in Mastoiditis and Complications: Infections of the mastoid and contiguous structures can be readily controlled by penicillin, provided the causative organisms are sensitive to the drug. Sterilization of the blood stream and control of spreading infections can be accomplished by systemic administration of penicillin, but surgical intervention is usually necessary to effect a cure. Local application of the drug has proved beneficial in the healing of persistently draining mastoid wounds. Putney has reported ten cases, among them one each of cerebral abscess, epidural abscess, mastoiditis, thrombosis of the lateral sinus, petrositis and meningitis. Sulfonamide compounds were administered to eight of the ten cases without clearing the infection, but prompt response was obtained by treatment with penicillin. Penicillin in combination with adequate surgical intervention offers the most effective means of combating serious and life-endangering otologic complications. (Arch. Otolaryng., April '45)

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Frozen Human Skin Grafts: Forty-one autogenous split-thickness grafts preserved in the frozen state in plasma from one to sixty-one days at temperatures of minus 20° to minus 25° C. were transplanted to three patients. These grafts resulted in 80.5 per cent permanent takes. Thirty-four control grafts of fresh skin in the same patients resulted in 86.4 per cent takes.

The result of grafting does not appear to be affected by the time of storage of the grafts in the frozen state, at least within the experimental limits mentioned.

Aside from the possible development of skin banks for homografts, the preservation of split-thickness autogenous skin grafts in the frozen state allows the operator to obtain at one operation large numbers of grafts which may be employed for transplantation at any time later on. (Ann. Surg., June '45 - Strumia and Hodge)

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Acute Infectious Hepatitis: Synonyms of acute infectious hepatitis are acute infectious jaundice, acute infective hepatitis, epidemic hepatitis, acute catarrhal jaundice and epidemic catarrhal jaundice. Homologous serum jaundice and arsenical hepatitis are very similar to and cannot be differentiated either clinically or pathologically from acute infectious hepatitis.

Acute infectious hepatitis is probably a virus disease which is characterized by inflammatory and degenerative changes in the liver and accompanied by symptoms and physical signs referable chiefly to the liver and gastrointestinal tract. Jaundice does not occur in all cases. Although the disease is usually benign with apparently complete recovery of liver function, from 0.1 to 0.5 per cent of all cases terminate fatally and from 3 to 5 per cent retain evidence of persistent liver damage.

Experiments concerned with the transmission of the disease to human volunteers leave little doubt that the causative agent is a filterable virus. Voegt in 1942 described the development of jaundice in one of four human volunteers who had been fed duodenal fluid from patients with acute infectious hepatitis. The largest experiment in human transmission occurred accidentally when more than 28,000 cases of hepatitis developed in the U. S. Army following inoculation of yellow fever vaccine to which had been added pooled human serum apparently containing the virus. Various workers in the United States and in England have shown that the disease can be transmitted to human subjects by means of filtrates of blood serum or plasma, nasal washings, feces, and urine from patients in the preicteric or early icteric phases of the disease (See Bumed News Letter of Feb. 2, '45). When infective material is introduced by the oral or intranasal route, the period of incubation may approximate that of the naturally occurring disease, which is from 20 to 40 days. If, on the other hand, the disease is induced by parenteral injection of filtrates of infective material or by transfusion of icterogenic blood or plasma, the period of incubation may be from 2 to 6 months, or longer. The causative agent is unaffected by heating to 56° C. for 30 minutes, by relatively high concentrations of phenol or by freezing and drying. Attempts to transmit the disease to experimental animals or to culture the virus in chick embryos have not met with success.

Present epidemiological considerations lead to the assumption that the usual portal of entry is the mucosa of the upper respiratory tract or the alimentary tract. No insect vector has been demonstrated. During periods of unusual crowding and in areas where sanitary controls are inadequate, the disease spreads rapidly and may become epidemic. With the institution of carefully controlled sanitary measures the incidence of the disease may decrease markedly.

Acute infectious hepatitis frequently develops following periods of extreme physical exertion, battle injuries, and the excessive intake of alcoholic beverages. Such factors may also influence the occurrence of severe recrudescences of the disease if they become operative before convalescence is complete.

In recent years it has been demonstrated by biopsy of the liver during the acute stage of hepatitis that the lesion is primarily one of inflammation and degeneration of the hepatic parenchyma. The typical lesion early in the course of the disease is characterized by granular and hyaline degeneration of the parenchymal cells in diffuse areas within the liver lobules. Multinucleated cells are observed and mitoses are seen in regenerating cells. Thrombi of inspissated bile form within the intracanalicular bile radicles. There are accumulations of polymorphonuclear leukocytes and monocytes in periportal areas. In most cases subsidence of inflammation is followed by complete restoration of normal structure of the organ. When clinical and metabolic signs of liver damage remain subsequent to acute attacks of hepatitis, microscopic examination reveals areas of persistent inflammation

of the liver parenchyma often associated with a marked increase in peri-portal fibrous connective tissue.

If death occurs early, there is marked cellular degeneration in the central areas of the lobule with loss of the usual lobular structure, and only scattered islets of liver cells remain. There is proliferation of the mucosa of the small bile ducts and the ducts may be elongated and tortuous. Cellular infiltration persists about the portal areas. In addition to the changes in the liver there may be inflammation with edema and hemorrhage of the mucosa of the intestine, particularly in the ileocecal region.

Symptoms: The first symptoms of the disease usually are lassitude, fatigue, loss of appetite, nausea, vomiting and vague upper abdominal discomfort. The onset is marked by low grade fever in nearly one-fourth of the patients. Fever may or may not be accompanied by chills. Other symptoms occurring frequently include headache, muscle or joint pains, somnolence, constipation, urticaria and dizziness. Later, patients may observe that their urine is dark in color. Before icterus appears, and in those cases which fail to present jaundice, hepatitis may be confused with upper respiratory infections, atypical pneumonia, influenza and infectious mononucleosis. Repeated physical examinations and laboratory studies may be necessary in these cases to make the diagnosis. The prodromal period is variable and in large groups of patients averages about 6 days.

The appearance of jaundice marks the beginning of the icteric phase. Care must be observed to rule out all other causes of jaundice, including Weil's disease, infectious mononucleosis, amebic hepatitis, malarial hepatitis, hemolytic jaundice, and obstructive lesions of the biliary tract. With the onset of jaundice the symptoms usually abate, and the patient feels much improved. Nausea and vomiting may cease abruptly and the appetite slowly reappear. However, at this stage of the disease even slight activity is likely to produce inordinate fatigue. Pruritus may develop and in some patients it may cause much distress. The urine, which becomes deeply pigmented with bile just before the appearance of icterus, often remains dark until the period of beginning convalescence. Acholic or light-colored stools are observed by about one-third of the patients.

Clinical Signs: During the pre-icteric phase and in those patients who have hepatitis without icterus, the findings on physical examination may be few. It is often possible, however, to palpate the liver margin and frequently there is tenderness over the liver area. When icterus develops, it is usually first observed in the sclerae, with greatest intensity toward the periphery or equator of the eye. Icterus later becomes generalized. In 50 per cent of the patients who develop jaundice the liver is palpable, the liver edge extending from 1 to 6 cm. below the right costal margin. Thirty per cent have

splenomegaly. Bradycardia and hypotension are frequently observed. In rare instances there is dependent edema. If pruritus has been severe and intractable, there may be numerous self-inflicted abrasions of the skin, particularly on the extremities and on the back. During convalescence, icterus, hepatomegaly, splenomegaly and other physical signs of the disease slowly disappear. In patients in whom recovery is slow and incomplete, and who may be assumed to have chronic hepatitis, icterus may decrease or disappear entirely but hepatic enlargement and tenderness may persist. In addition, spider hemangiomata confined to the skin of the upper areas of the body may develop. Ascites is a premonitory sign of grave significance and occurs only in those patients who are most severely ill. Signs of central nervous system origin develop late in the course of the disease in those cases terminating fatally. There may be tremors, involuntary twitching, picking at the bed clothes, stupor and coma.

Laboratory Findings: The red blood cell count is generally maintained at normal levels throughout the course of the disease. Hyperchromic anemia sometimes develops in patients who are severely ill and in those who retain chronic liver damage over periods of several months. Macrocytosis may be noted, however, even in the presence of normal erythrocyte counts during the early stages of the disease.

The white blood cell count varies from 4,000 to 11,000 early in the course of the disease. Lymphocytosis of from 45 to 70 per cent is frequently noted and eosinophile counts of from 4 to 10 per cent are not unusual.

There are various laboratory procedures and tests of liver function which are useful in the diagnosis of hepatic disease and in the evaluation of the degree of hepatic dysfunction. Certain of these may be used to great advantage in establishing the diagnosis and in following the course of the disease.

The bilirubin concentration of the plasma in normal individuals varies from 0.3 to 1.0 mg. per cent. Levels as high as 25 and 30 mg. per cent are often observed in acute infectious hepatitis in the presence of icterus. Peak concentrations are usually reached within 10 days of the appearance of jaundice. There follows a rather rapid fall to concentrations of from 3 to 5 mg. per cent after which there is a slow but progressive decrease to normal or near normal levels. In the pre-icteric phase of the disease and in those patients in whom icterus does not appear, the concentration of bilirubin in the plasma may be only slightly above 1.0 mg. per cent. Many individuals who have had attacks of this disease have been found to have slight to moderate elevation of the concentration of plasma bilirubin which persists for months and even years after apparently complete recovery.

The ratio of free cholesterol to total cholesterol in the plasma is normally maintained at values between 20 and 30 per cent. In the presence of

liver damage there is an increase in this ratio due to a decrease in the amount of cholesterol ester. The ratio of free cholesterol to total cholesterol in acute infectious hepatitis during periods of most marked liver damage may reach values as high as from 60 to 70 per cent. As the patient recovers from the acute phase of the disease this ratio gradually returns to normal values. If recovery is not complete, the cholesterol ratio remains elevated. It is similarly increased during the preicteric phase of the disease and in patients with hepatitis without icterus. Despite the increase in this ratio, there is no significant change in the concentration of total cholesterol in the plasma.

The determination of the retention of bromsulfalein in the plasma 45 minutes after the injection of 5 mg. of the dye per kilogram of body weight provides a test which is particularly useful in evaluating the functional status of the liver following the disappearance of jaundice. When the concentration of bilirubin in the plasma is greatly increased, there is invariably a marked retention of bromsulfalein. However, the approach of the plasma bilirubin to a nearly normal level does not always indicate the return of the liver to its normal functional capacity. At such times it is not unusual to find the retention of bromsulfalein above the normal range of from 0 to 10 per cent. If the test is repeated at intervals, it will be found that the retention of the dye decreases as liver damage is repaired, and the normal function of the liver is restored. However, if liver damage persists and chronic hepatitis results, bromsulfalein retention may remain increased for weeks or even months. The changes in bromsulfalein retention are usually paralleled by similar changes in the ratio of free to total cholesterol of the plasma.

Characteristic changes in various other constituents of plasma have been observed. The total protein may be either increased or decreased. The globulin fraction has been found to increase markedly in a few patients. Alkaline phosphatase activity may be increased to levels of from 6 to 20 units in the early stages of the disease. The prothrombin time is frequently increased but usually returns to normal following the parenteral administration of vitamin K. The concentration of plasma vitamin A is decreased early in the disease but returns to normal values soon after the initiation of the recovery process. The values for cholinesterase and lipase activity of the plasma are likely to be lowered early in the course of the disease. Because these changes are minimal in the majority of patients and the laboratory technics are difficult to adapt to routine hospital laboratories, these tests are not proposed as suitable procedures either as aids in diagnosis or in following the clinical course of the disease.

The cephalin-cholesterol flocculation test is positive in most patients with acute infectious hepatitis. However, there are difficulties in the

interpretation of the test in these patients. Weak positive reactions, i.e., one or two plus, are often encountered in normal individuals. Negative and weak reactions occur frequently in patients who have acute infectious hepatitis. Moreover, three and four plus reactions may persist for long periods of time in patients who present no other manifestations of hepatic disease. The technic of the test, although simple, is influenced by many factors, including the method of preparation of the cephalin, cleanliness of the glassware used, the effects of light and temperature, and the time at which the reaction is recorded. Maclagan recently has described a similar reaction which depends upon the turbidity produced in a barbital buffer solution saturated with thymol when the serum of patients with hepatic disease is added. Preliminary studies indicate that this reaction is not subject to many of the hazards in determination and interpretation involved in the cephalin-cholesterol flocculation reaction. For these reasons the thymol turbidity test is rapidly proving to be a valuable adjunct to the diagnostic procedures for use in the study of liver disease.

Treatment: Optimum care and treatment of the patient with acute infectious hepatitis depend upon early recognition of the disease, prompt hospitalization, the maintenance of nutrition and fluid balance during the acute phase, provision of an adequate diet as soon as the patient is able to take and retain it, and especially upon strict supervision of activity during convalescence. The diagnosis must be considered in all patients who present symptoms of gastrointestinal disorders during epidemic periods of the disease. At such times, also, every youthful patient with jaundice must be assumed to have hepatitis until it can be proved otherwise.

During the acute phase of the disease the patient should be kept strictly at bed rest. Lavatory privileges may be extended only after initial and disturbing symptoms have abated. If vomiting is severe and intractable, it is necessary to maintain nutrition and fluid balance by means of frequent infusions containing glucose and protein hydrolysates. Every effort should be made to provide an optimum dietary intake. Too great a limitation of fat in the diet is not desirable. The provision of fat in moderate quantities, particularly that provided by fresh cream, butter and eggs, adds greatly to the appeal of the diet for these patients who require every encouragement to eat. An optimum diet should provide from 350 to 450 Gm. of carbohydrate, from 100 to 125 Gm. of protein, and from 80 to 90 Gm. of fat daily. Diets may be fortified with carbohydrate by the addition of lactose to fruit drinks and with protein by giving gelatin or preferably powdered skimmed milk in soups or milk drinks. Vitamin supplements may also be of value. Vitamin K should be given parenterally to patients showing prolongation of prothrombin time. Access to alcoholic beverages in any form should be strictly prohibited. Other treatment should be directed at the relief of distressing symptoms. Barbiturates and morphine derivatives must be used with caution.

The process of detoxification of these drugs is impaired and small doses may give more than desired effects. Surgery of any type during the early stages of acute infectious hepatitis is associated with more than usual risk and should be undertaken only after very careful consideration of the danger involved. If the cause of jaundice is uncertain, all diagnostic aids should be exhausted before resorting to exploratory laparotomy.

No type of specific therapy has been demonstrated to be effective during the acute phase of the disease. Choline and methionine have been found to afford protection against certain types of experimental liver damage in animals. Each of these substances has been given in large amounts to patients with acute infectious hepatitis without providing evidence of favorable effects on the course of the disease.

A recent report of Stokes and Neefe indicates that gamma globulin given during the incubation period may abort the disease or decrease its severity. This may prove to be a valuable adjunct in the control of epidemics but full evaluation of the effectiveness of this procedure must await its trial in large groups of subjects.

During the period of convalescence the prescribed diet should be carefully maintained. Prior to the return of normal liver function, the patient will frequently complain of fatigue following mild physical activity. Additional activities should be permitted only with careful consideration of the status of the patient as judged from clinical findings and from laboratory data. Recrudescences often occur, usually when there has been too great haste in granting extension of activity. It is wise to restrict the patient to the confines of the hospital until tests of liver function no longer give evidence of liver damage. When the results of physical examination and laboratory procedures indicate complete recovery of liver function, return to normal activities may be permitted on a gradually increasing scale, allowing a period of from 2 to 3 weeks to accomplish resumption of full activity.

Certain criteria of recovery should be utilized and the patient not returned to duty until all of these conditions are met. Clinical signs and symptoms of hepatic dysfunction should no longer be present. The patient should have tolerated at least two weeks of normal activity without undue complaint of fatigue and without return of abnormal changes in tests of liver function. It is important that the patient be retained in the hospital until he has regained most of the weight lost during the acute phase of the disease. A loss of from 25 to 30 pounds is not unusual. Failure to gain weight may be the result of inadequate dietary intake or of sustained disease activity.

Recrudescences of the disease frequently follow alcoholic bouts. For this reason patients should be urged to abstain from alcoholic beverages for a period of several months after recovery.

The patient who develops chronic hepatitis following acute infectious hepatitis may require prolonged treatment and care. He should be hospitalized and provided with the previously described optimum diet. His activities should be limited. Clinical improvement and at least partial reversal of aberrant liver function have been observed following treatment with large quantities of crude liver extract administered parenterally. (Nav. Med. Res. Unit, Hosp. of the Rockefeller Res. Inst. - C. H. Hoagland and R. E. Shank)

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The Cephalin-Cholesterol Flocculation Test: Hanger's Cephalin-Cholesterol Flocculation test is described in the Blood Chemistry Manual (Clinical Chemistry - Part I) of the Naval Medical School. The following suggestions may be of practical importance in its use:

Baker et al have found that some samples of cephalin will give emulsions which are flocculated by sera of normal individuals. Ripening of the cephalin by exposure to light and air for a period of at least six weeks overcomes this difficulty.

It is very important that only clean glassware be used. When cleaning solution is used, all traces of the acid must be removed.

In preparing the Cephalin-Cholesterol emulsion, it is important to allow the emulsion to simmer slowly to the final volume of 15 cc.

After the tubes are set up, they should be kept in a dark place away from light.

It is advisable to set up a control with normal serum for each set of tests.

Serum is preferable to plasma for the test since plasma more often gives a false-positive reaction. (Nav. Med. School, Bethesda, Md. - J. J. Engelfried)

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Functional Enuresis: A clinical neuropsychiatric study was made in an Army training camp of 100 men with functional, nocturnal enuresis. The educational and occupational background of the group was, in general, below average. Most of the men had lived in rural communities in childhood and had used outdoor toilets. There was a high incidence of enuresis in the immediate members of the patients' families (parents, siblings and children). A considerable number of men gave a history of disruption of the home or

of exposure to various other unfavorable types of emotional environment in childhood. There was no definite evidence of mild or arrested forms of heredodegenerative disease (or so-called myelodysplasia) in any of the series. Simulated enuresis could not be demonstrated in any of the group.

There was a relatively high percentage of men of below average intelligence (dull normal, borderline and moron). The vast majority of them manifested, in addition to enuresis, various neurotic tendencies and personality disorders, usually beginning in early childhood. Most of the men showed evidence of emotional immaturity, dependence and a passive type of personality makeup. Not infrequently there was persistence or recurrence of some of the various so-called neurotic traits and habit disorders of childhood, such as nightmares, nail biting, stuttering, fear of the dark, sleepwalking and talking in the sleep. Functional backache was a common symptom. Virtually none of the series had ever received adequate medical attention for enuresis prior to the period of Army service.

Functional enuresis in adults is generally but one manifestation of a lifelong pattern of neurotic behavior or personality maladjustment and is not infrequently associated with inadequate intelligence. Apart from the consideration that the symptom of enuresis itself creates a difficult situation in the Service, it is apparent that the large majority of enuretic adults do not possess the emotional or intellectual qualifications necessary for successful performance of duty in the Armed Forces. (War Med., May '45 - Shlionsky et al)

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Gamma Globulin: Plasma proteins consist of two fractions of albumin and three fractions of globulin, alpha, beta and gamma, in addition to those fractions contributing to blood coagulation and blood type. Albumin is responsible for the maintenance of plasma volume and thus is important in the treatment of shock, hypoproteinemia and edema. Of the globulins, the gamma fraction is concerned with the phenomenon of immunity, for in this fraction of plasma from normal and convalescent persons are found antibodies of high titer.

Dougherty, Chase and White have discovered that antibodies are present in the lymphocytes, and they believe that the lymphoid tissue is the site of antibody formation. Many attempts have been made to separate the antibody portion of the plasma from the gamma globulins, but all have proved unsuccessful. Kass has shown that the antibodies are specific modifications of the gamma globulins and that these occur in the lymphocytes, the antigen serving as the stimulus for the modification of the gamma globulin. Thus it appears that the gamma globulins are formed in the lymphoid tissue.

The administration of either the adrenotropic hormone or the adrenal cortical steroids causes an increase in the amount of total protein of the blood. In rabbits it was found that this increase is due almost entirely to increase in globulins. It has been found by electrophoretic means that the protein present in lysed rabbit lymphocytes is identical to the gamma globulins of the plasma. White and Dougherty believe that the pituitary-adrenal mechanism is the normal means of controlling the release of the serum globulin from the reticuloendothelial cells.

As a result of the foregoing observations, the origin of the plasma proteins has now been further elucidated. The albumins are known to be formed in the liver; various degrees of liver damage cause a reduction of the plasma albumin. It is now believed that the globulins originate in the lymphoid tissue where the gamma globulins may be modified to give rise to the various antibodies. The role of gamma globulins in medical practice promises to be increasingly important, depending on the isolation and production of purified preparations. (J.A.M.A., June 9, '45 - Ed.)

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Pathogenesis of Anemia Associated with Infection: The anemia associated with infection is usually normocytic and normochromic but may become slightly microcytic and slightly hypochromic. No accompanying reticulocytosis has been observed. The bone marrow is hyperplastic, and there is an increase in the myeloid-erythroid ratio.

Hypoferremia, hypercupremia, an increase in the amount of protoporphyrin contained in the red cells, and coproporphyrinuria have been observed. The plasma bilirubin and total plasma proteins have been found normal. There is a pronounced alteration of iron metabolism, as indicated by hypoferremia, flat oral iron absorption curves, and rapid disappearance of iron from the blood stream following intravenous injection. The anemia of infection corresponds to the anemia of iron deficiency in some respects, but does not respond to iron therapy.

Hypoferremia and anemia developed in dogs when abscesses were produced by the intramuscular injection of staphylococci. The hypoferremia preceded the development of anemia. Staphylococcal toxins failed to cause anemia and produced only a moderate lowering of the plasma iron. Typhoid vaccine failed to produce either hypoferremia or anemia.

On the basis of these observations, it now seems possible to outline a working hypothesis for the pathogenesis of the anemia of infection. According to this hypothesis, inflammatory tissue elaborates a substance which diverts iron to the tissues with the result that it is not available for hemoglobin

synthesis. As a consequence of this demand of the tissues for iron, the removal of iron from the blood stream is hastened and possibly its absorption from the bowel is increased. Because iron is not available for use by the bone marrow, the reaction of protoporphyrin and iron to form heme cannot proceed. As a result, the protoporphyrin in the erythrocytes and the copper in the plasma cannot be utilized and are stored awaiting the time when iron is available. (OEMcmr-502, Cartwright et al, Univ. of Utah, CMR Bulletin #45)

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Visual Symptoms Caused by Digitalis: Carroll reports visual symptoms which occurred in six patients who were taking digitalis. General symptoms of digitalis intoxication caused three patients to return to the internist for advice, but the other three consulted an ophthalmologist because of visual disturbances. None of these patients suspected digitalis as the cause of their symptoms, and none gave a history of taking digitalis until they were specifically questioned regarding it. The visual symptoms included: colored vision, chiefly white, green, yellow or red; flashes of light; positive colored scotomata and other visual hallucinations. There was no change in the visual acuity or in visual fields of these patients. It is suggested in the literature that if the intoxication is sufficiently profound, a type of temporary cortical blindness may result. This condition may occur in patients receiving what is considered a normal dosage of the drug and may be the only symptom present. Recovery takes place within two weeks after the medication is stopped. (Am. J. Ophth., April '45)

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Yellow Bone Marrow Extracts: Normal albino rabbits were given comparable amounts of 15 unit liver extract, cod liver oil, whole milk, concentrated carotene solutions and extracts of yellow bone marrow by intramuscular injection. There was a comparable increase in the absolute number and relative percentage of circulating granulocytes within from four to six hours after administration of the test material. The response in each case was similar and therefore non-specific.

Using a modification of the procedure described by Kracke, subcutaneous injections of a solution consisting of 5 parts of benzene to 1 part of olive oil were given twice daily in 1 cc. amounts. Approximately 80 per cent of the rabbits developed granulocytopenia in an average period of ten days.

Rabbits which were poisoned with benzene in this manner and which were given daily intramuscular doses of 15 unit liver extract, cod liver oil, whole milk or concentrated carotene solutions for fourteen consecutive days showed no evidence of either physical, leukocytic or clinical response. Rabbits which

were similarly poisoned, however, when given comparable doses of yellow bone marrow extract, showed immediate response and complete physical, leukocytic and clinical recovery by the fourteenth day.

Extracts of yellow bone marrow, in contrast to all other materials tested, contain a specific substance or substances which stimulate leukopoiesis in benzene-poisoned rabbits. (Am. J. Med. Sci., June '45 - Caldwell et al)

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Appraisal of Nutritional States in Humans: Classification and definition of degrees of nutritional states are made as follows: saturation (with sub-zone of excess); unsaturated, but functionally unimpaired; potential deficiency disease; latent deficiency disease; clinically manifest deficiency disease. It is suggested that the second zone represents an adequate state of nutrition, and that there is no cogent evidence that any higher level is more beneficial to health in the human. An optimal state of nutrition cannot be differentiated from an adequate one.

The data for assessing these nutritional states are of three types: those obtained by clinical examination, those derived from biochemical and physiological tests and those determined by measurement and estimation of the food intake. The clinical examination detects only well-developed deficiency disease and must be supplemented by other evidence. Recent claims that the diagnosis of some vitamin deficiency diseases may be made solely on the biomicroscopic examination of certain tissues have been weighed and found wanting. The interpretation of most of the biochemical tests is uncertain because these tests have not been correlated with the production of the clinical signs and cure of the disease in human subjects. The dietary standards which are widely employed in estimating dietary adequacy were not designed as standards of adequacy and are not founded on sufficient data on human subjects; consequently they give false, excessive measures of the incidence of deficiency conditions. The estimates of widespread deficiency disease in this country (brought together in Bulletin 109 of the National Research Council) depend largely on estimation of the dietary intake and upon biochemical tests, and are therefore unreliable.

Future advances in the means of appraising the nutritional status of the individual will rest upon elaboration of our knowledge of the role which vitamins play in biochemistry, physiology and pathology in humans. This can be attained (1) by investigations in which clinical deficiency diseases are produced and cured in a considerable number of subjects; (2) by careful studies of those spontaneously-occurring cases of dietary deficiency disease and of conditioned deficiency disease. Such studies will lead to more accurate evaluation of the nutritional states of populations, and facilitate the

search for correlations between nutrition and health. (Physiol. Rev., April '45 - Dann and Darby)

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Amputations: Experience gained in recent campaigns has emphasized certain factors which should be given careful consideration in the early care of casualties in whom there has been major trauma to an extremity.

Because of the importance of the subject, BuMed letter of March 29, 1944, is herein reprinted on page 24 for the benefit of those who may not have ready access to a copy of it. Personnel responsible for the early treatment of casualties in forthcoming operations should review this letter.

Indications for Amputation of an Extremity: There are only two indications for amputation of an extremity following trauma: (1) irreparable loss of all blood supply; (2) uncontrollable infection which endangers the life of the patient.

(1) Irreparable loss of all blood supply: A decision to amputate because of loss of blood supply should be reached only after an adequate period of study and observation. Absence of peripheral arterial pulsation may be caused by temporary interruption of the circulation due to pressure of bone fragments, massive hematomas and/or arterial spasm and by profound circulatory collapse. Circulation is often reestablished in these cases after a period of watchful waiting, removal of factors causing interruption of circulation by pressure and elimination of arterial spasm. However, when it has been definitely ascertained that the blood supply is irreparably lost, delay in amputation invites disaster from gas gangrene.

Traction should be applied cautiously to extremities which have been severely traumatized, particularly in comminuted fractures resulting from missiles or shell fragments. In these cases, the muscle may be damaged to such an extent that contractility has been lost and, consequently, there may be little or no over-riding of bone fragments. When traction is applied in such cases, the pull against the soft parts may impair the integrity of the remaining blood supply. Such cases are best treated by gentle realignment of the fragments, followed by immobilization in a plaster or Thomas splint, so as to permit close observation of the extremity.

(2) Uncontrollable infection which endangers the life of the patient: There are few infections endangering the life of the patient which cannot be controlled by treatment with penicillin, sulfonamides and other modern therapeutic procedures available in all areas. Generally speaking, uncontrollable infection necessitating immediate amputation accompanies severe impairment of the

blood supply to the part and is usually caused by the malignant gas-forming organisms. Infection with gas-forming organisms not associated with marked impairment of blood supply can usually be successfully treated by wide surgical exposure of the wound, local use of oxidizing agents and administration of penicillin and sulfonamides along with other supporting measures.

Amputation of an extremity should not be performed because of probable eventual loss of function of the part. It is often the case, especially in young adults, that restoration of function proceeds with time and careful management, even in the severely injured, to such a degree as to make comparison with an artificial limb untenable.

The type of amputation to be performed: The "guillotine" or open circular method of amputation continues to be the best and safest method under field or war conditions. A flap or plastic stump operation should not be performed in the field, on board small ships or in similar situations. A loose flap operation may be the method of choice in some cases in base hospitals, hospital ships and larger ships when the necessary facilities and surgical skill are available. In these cases, the flaps should be of approximately equal length to insure a transverse terminal scar. The flaps may be left open or may be approximated loosely with widely separated, interrupted sutures to permit adequate drainage of the stump.

Level of amputation: All viable skin and tissue should be preserved in every case, without regard to future prosthetic considerations. Amputations performed at the classical sites of election are to be condemned when viable tissue is thereby sacrificed.

Skin traction of the amputation stump: All amputation stumps require traction in order to insure proper healing and preservation of maximum stump length. Skin traction should be applied to the stump at the time of or immediately following the operation. It should never be delayed more than 48 hours in any case, and it must be maintained continuously. It is essential that traction be maintained during transportation of the patient.

* *

In order that the Bureau may obtain all pertinent data for a scientific evaluation of the methods employed in the Navy during the present conflict, the indications for amputation should be recorded in detail in the patient's health record. (Prof. Div., BuMed - G. C. Thomas)

* * * * * *

Burn Dressings: The definitive treatment of burns and burn shock has been fairly well standardized and has been described in the Bumed News Letters of May 11 and May 25, 1945. Standards of treatment are based chiefly on the care of isolated cases under more or less ideal conditions which seldom exist in battle. In combat, many casualties suffering from burns may have to be treated under extremely unfavorable circumstances.

In making plans for action, the medical officer must be resourceful. His aim should be the standard ideal treatment, but he should make plans to cover every conceivable contingency. When a calamity occurs, the success of his efforts will depend a great deal upon the soundness of his planning and the thoroughness with which training of personnel has been carried out. There need never be panic or indecision.

The handling of a single burn casualty aboard ship presents no special problem. When there are large numbers of casualties to be treated, however, and particularly when there is a loss of medical personnel and dressing materials, the type of treatment may have to be greatly simplified. Under these circumstances the simple wrapping of the patient in a clean sheet for evacuation might be considered as standard practice. Any treatment established as standard practice on board ship must be uncomplicated, quickly accomplished and sufficiently simple for at least partial application by non-medical personnel.

The controversy concerning the use of plain dry gauze or a greased dressing on a fresh burn is entirely elemental. Freshly burned surfaces as seen in the Navy are usually sterile. Dressings are applied for two primary purposes: to prevent contamination and to reduce pain by the exclusion of air. Both dry and greased dressings meet these requirements. There is no antiseptic ointment at the present time, including the sulfonamide preparations, that can be used with safety owing to the danger of general toxicity or local cellular damage. Some investigators feel that even plain vaseline dressings interfere with epithelization of burned surfaces.

Only fine mesh, sterile dressings should be applied directly to the burned area. To expedite application of dressings, it would seem feasible to have prepared arm-length gloves, thigh-length leggings, diapers and body jackets made of ordinary sheeting. These may be folded in such a manner as to permit application to the appropriate part by hands which are not sterile without contaminating the inner surface of the dressing or the burned surface. When sterilized, packaged in wax paper bags and labeled, these articles may be stored in convenient locations ready for use. Cotton, cotton waste, cellulocotton or other fluffy materials may be used as padding. This material should be made up in the form of pads from 6 to 8 inches wide and from 16 to 20 inches long, which facilitates their application, as it requires many hands to hold bulk

waste properly distributed while the compression bandage is being applied. It is preferable, although not absolutely necessary, that this material be sterile. Although compression bandages may be made of any material at hand, stockinette or elastic bandages are better than those made of non-elastic material. Bandages should be put on snugly but must not be so tight that they interfere with circulation. When materials with which to build up a compression dressing are not available, it is well to remember that compression per se is only of importance secondary to covering the burned surface.

When primary dressings are properly applied, there should be no necessity for redressings for a period of from 10 to 14 days when dry dressings may generally be removed with little difficulty. If the dressing applied is only temporary in nature, some bland, easily removable grease should be applied to the burn surface to facilitate removal of the dressing. Meddlesome changing of dressings during the early days following the burn may result only in further cellular damage and may also open avenues for infection. (Prof. Div., BuMed - F. R. Hook)

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Insect Control Bulletin: The Abstract Bulletin of the OSRD Insect Control Committee is published semimonthly by the Coordination Center, Insect Control Committee, Office of Scientific Research and Development. The purpose of the Bulletin is: (1) to secure prompt, wide dissemination of the information contained in current reports; (2) to provide abstracts of the current reports received from OSRD investigators and other sources which are of general interest; and (3) to group the reports for the convenience of those whose interest is in a limited field of research.

The Bulletin is being distributed to all Malaria Control Units and Epidemiology Units in the field. Individuals engaged in insect control activities who desire to receive the Bulletin may have their names placed on this mailing list. Requests should be sent to Publications Distribution Section, Administration Division, Bureau of Medicine and Surgery, Navy Department, Washington, D. C. (Prev. Med. Div., BuMed - T. J. Carter)

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St. Louis Encephalitis Vector: Evidence is now complete incriminating Aedes dorsalis as a natural vector of St. Louis encephalitis virus. Laboratory transmission of the virus by means of this mosquito species has been effected. (OEMcmr-138, Hammon, Univ. of Calif., CMR Bulletin #44)

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The Effect of Increased Oxygen Tension on Plasmodium Gallinaceum Malaria in Chicks: Exposure to oxygen at atmospheric and increased pressures for periods of from four to ten hours daily had no effect on the rate or degree of parasitemia, the development of exo-erythrocytic forms, or the survival time of chicks infected with P. gallinaceum.

Prolonged daily exposures to oxygen at atmospheric pressure resulted in a significant decrease in survival time, accompanied during the later stages of the infection by inability of the treated birds to readjust to ordinary air.

Oxygen administration, supplemented by quinine therapy, did not alter the course of the infection, and in most cases decreased survival time. (Nav. Med. Res. Inst., Res. Proj. X-150 - Terzian et al)

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Malaria Terminology: The following terms commonly employed in the field of malaria are defined and presented as a reference for the sake of unanimity of thought:

Infection is the condition in which living malarial parasites are in the body, whether demonstrable clinically, by blood examination, by subinoculation, by relapse in the absence of reinfection or by other means.

Parasitemia is the condition in which parasites are in the blood. A parasitemia is called patent when it is demonstrable by blood smear examination. Otherwise, it is subpatent.

Incubation Period is the interval between the introduction of parasites into the body and the first manifestations of the primary clinical attack. The criteria for the beginning of the latter should be specified, usually in terms of degree of elevation of temperature.

Prepatent Period is the interval between the introduction of parasites and the first appearance of parasitemia, as demonstrated by blood smear examination.

Clinical Attack is a phase of the disease marked by clearly defined symptoms associated with parasitemia. If parasitemia is unconfirmed, it is a clinical attack (probable). The first attack after infection is the primary clinical attack. If unusually late in appearing, it is a delayed primary clinical attack.

Patent Period is any period during which parasitemia is demonstrable by blood smears. The primary patent period is the first period of patency following introduction of parasites.

Latency is any state in which the infection is hidden. Clinical latency is infection without clinical symptoms; parasitic latency is infection in which parasitemia is subpatent or absent. The two may or may not occur together. The term clinical latency thus includes (a) the incubation period, which in some infections may be greatly prolonged, and (b) the periods between clinical attacks. The term parasitic latency similarly includes the prepatent and other subpatent periods.

Relapse may be either clinical or parasitic. Clinical relapse is any clinical attack other than the primary one occurring in the absence of reinfection. Parasitic relapse is a reappearance of, or a marked increase in, the number of circulating parasites, occurring after a period of subpatency or low-grade parasitemia. (Comment: It is recommended that the use of the terms recurrence and recrudescence be discontinued.)

Cure is the eradication of the infection from the host. Clinical cure connotes both freedom from infection and restoration to health while parasitic cure connotes only eradication of the infection. Spontaneous cure results from unaided interaction between host and parasite. Chemotherapeutic cure is associated with the action of a drug; the term is usually reserved for treatment begun during or after patency. Since there are no certain proofs for eradication of the parasite, it is recommended that the statement of cure be qualified by including criteria, such as length of symptom-free or smear-negative period, negative subinoculation or susceptibility to reinfection with a homologous strain.

Complete Prophylaxis is prevention of parasitemia by action upon the sporozoite or succeeding stages of the parasite. Partial prophylaxis is the delay of parasitemia by action on the sporozoite or other pre-erythrocytic stages of the parasite.

Suppression (repression) is a limitation or reduction of infection without eradication. It usually results in prevention or alleviation of clinical symptoms. (Board for Coordination of Malarial Studies, Conference on Terminology, N.R.C., May '45)

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Prosthetic Appliances and Training in Their Use: "An opinion was requested as to whether Section 104 of the Servicemen's Readjustment Act of 1944 (Act of June 22, 1944; Pub. Law 346, 78th Cong.) requires that persons in the naval service in need of prosthetic appliances be furnished such appliances and trained in their use prior to discharge from the Service, and also whether the term 'prosthetic appliances' as used in the Act should be interpreted to include dental prosthesis. It has been the policy of the Medical

Department of the Navy, even prior to the enactment of the Servicemen's Readjustment Act of 1944, to furnish service personnel orthopedic appliances such as artificial arms and legs, if needed, prior to discharge from the Service, including necessary fitting and limited training in their use. Also, there have been instances when individuals have demanded that teeth extracted while in the Service be replaced before discharge or release from active duty, quoting the law above referred to as authority therefor."

"It is particularly pertinent that Section 104 does not in itself establish entitlement to prosthetic appliances, but apparently contemplates that where otherwise entitled to such appliances, either by law, regulation or custom, naval personnel and former personnel of the naval service shall also be entitled to necessary fitting of the appliances and training in their use. The law does not require that the fitting and training be accomplished prior to discharge, but it does confer upon a member or former member of the naval service the right to fitting and training either in a naval hospital prior to discharge from the Navy, subsequent thereto, or in a Veterans' Administration hospital or by out-patient treatment, as may be appropriate in each case."

"It was held that the policy of the Bureau of Medicine and Surgery to furnish Service personnel orthopedic appliances such as artificial arms and legs, if needed, including necessary fitting and limited training in their use, prior to discharge, is not inconsistent with the law and may legally be continued. Such additional training in the use of a prosthetic appliance as a person may require can be furnished after discharge either at a naval hospital or at a Veterans' Administration facility as may be appropriate. Of course, any discharge is subject to the further provision in Section 104 that where further hospitalization is required in any case a discharge or release from active duty shall not be effected until and unless a person has executed a claim for hospitalization to be filed with the Veterans' Administration or has signed a statement that he has had explained to him his rights to file such a claim."

"As to whether the term 'prosthetic appliances' as used in the Act should be interpreted to include dental prosthesis, as above stated Section 104 of the Act does not in itself provide entitlement to prosthetic appliances. Where it has been the practice to furnish dental prosthesis, the fitting of the appliance and training in its use would, in most cases, be of minor consequence and should, of course, be supplied regardless of any provision of law with respect thereto. Where it has not been the practice to supply missing teeth extracted while in the naval service, for example, there is no requirement in Section 104 of the above-mentioned law that such dental prosthesis be supplied. An examination of the hearings of the Servicemen's Readjustment Act of 1944 revealed that the law is primarily concerned with cases of amputations, such as amputations of legs or arms." (File: JAG:II:AVDS:ec, April 4, 1945; Advance Copy - Court Martial Orders, April 12, 1945, p. 17)

Control of Air-Borne Infections with Ultraviolet Irradiation: Ultraviolet irradiation from high intensity sources (235 watts of ultraviolet energy) of the floors and upper air of barracks housing naval recruits was accompanied by a 25 per cent reduction of respiratory illness as compared with illness in an adjacent control barracks. This effect was most noticeable in the early winter months when morbidity rates were at a generally high level throughout the camp. At this time the morbidity rate in irradiated barracks was approximately 35 per cent less than in the control barracks.

Streptococcal illness and carrier rates which were at a very low level were not further reduced among men living in irradiated barracks. However, beta hemolytic streptococci, isolated from air and dust, were found more frequently and in greater numbers in control barracks than from irradiated sleeping quarters. Bacterial counts from air samples in irradiated barracks showed a definite reduction (50 per cent) also in total saprophyte colony counts as compared with counts from non-irradiated control barracks.

The reduction in morbidity rates was marked in the irradiated group only in the first months of the study period. In view of this fact, the results of the experiment from 1943 to 1944 should be interpreted with caution. The final assessment of the limits of effectiveness of ultraviolet irradiation in barracks must await evaluation of the observations made during the winter of 1944-45. (Am. J. Pub. Health, May '45 - Wheeler et al)

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To: All Ships and Stations.

BuMed-J-JS
P4-3/NH(082)

Subj: Amputations.

29 Mar 1944

1. The management of amputations in the Navy under a uniform policy is essential for the proper rehabilitation of these casualties. The U. S. Naval Hospital, Mare Island, California, and the U. S. Naval Hospital, Philadelphia, Pennsylvania, have been designated as amputation centers. These hospitals have been specially staffed and equipped for this purpose. It is directed that all Naval Personnel who have sustained wounds requiring amputation of an extremity be treated according to the principles set forth below and be transferred to the nearest amputation center as soon as possible after amputation has been performed.

2. As a general rule, amputations should not be performed under field conditions. Proper emergency treatment, including control of hemorrhage, chemotherapy, dressing of the wound, and splinting of the part, will usually permit evacuation of the patient to a hospital.

3. The indications for amputation of an extremity following trauma are the irreparable loss of all blood supply and infection which cannot be controlled by chemotherapy or conservative surgical treatment. Decision to amputate should be reached only after complete evaluation of all features of the case, and, if possible, after consultation.

4. The guillotine or open circular method of amputation should be the procedure in traumatic surgery under war conditions. In this amputation, all viable tissue and maximum bone length are retained without regard to future prosthetic considerations. The prolonged use of the tourniquet is to be avoided. It is usually practicable to control hemorrhage by elevation of the part and by manual pressure by an assistant. Soft tissues and bone should be seized with large toothed clamps and secured with double transfixion ligatures of chromic catgut. Nerves should be severed cleanly and ligated without manipulation or injection. The wound should be dusted with sulfanilamide or other bacteriostatic agent. Vaseline gauze provides a smooth non-irritating protection for the wound. A large pressure dressing should be applied for control of postoperative bleeding. Transfusion, preferably whole blood, should be given in every case.

5. All guillotine amputation stumps require traction in order to prevent skin retraction and protrusion of bone with resultant delay in healing. It should be applied no later than 48 hours after amputation and should be maintained continuously until the wound is healed. Traction may be applied by adhesive plaster strips, by sponge rubber strips, or by stockinet secured to the skin by Ace Adherent attached to suitable weights or by fixation to such devices as the Thomas splint.

6. It is essential that traction be maintained during transportation; otherwise, all the benefit of previous treatment may be lost.

7. Practically all guillotine amputation stumps require revision or reamputation. These procedures shall be deferred until arrival at an amputation center.

--BuMed. Ross T. McIntire.

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ALNAV 132 BuMed 16 Jun 1945

Subj: Human Serum Albumin.

Stock No. S1-1945 serum albumin human, as manufactured by Eli Lilly, lot No. 330102A and 330101B, are contaminated and shall be destroyed.
--SecNav. Ralph A. Bard.

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ALNAV 141 BuMed 20 Jun 1945

Subj: Casualty Reports.

Alnav 141-45 amended to read: "Original dispatches from ships within continental United States and stations within continental United States reporting deaths shall contain all information required by article 908(2), Navy Regulations. Ships and stations outside continental limits comply with Alnav 162-42."
--SecNav. James Forrestal.

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ALNAV 144 BuMed 25 Jun 1945

Subj: Casualty Reports.

Substitute in last sentence of Alnav 141-45 words "Alnav 120-45" instead of "Alnav 162-42".
--SecNav. Ralph A. Bard.

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CIRCULAR LETTER NO. 190-45

To: All Ships and Stations. Pers-6308-nu
P17-2/MM

Subj: Use of Medical Department Technical and Special Qualifications Abbreviations on Standard Transfer Order Form on Transfer of Hospital Corps Enlisted Personnel. 29 Jun 1945

1. Listed below are the official abbreviations of Hospital Corps enlisted personnel qualified in medical-department technical specialties and special qualifications. The official abbreviation shall be inserted immediately following the rating listed on the "Standard Transfer Order" issued.

Technical Specialty	Abbreviation
Aviation Medicine	AVT
Clerical Procedures	CLT
Clinical Laboratory Technology	LBT
Commissary	CMT
Deep Sea Diving	DIV
Dental Technology General	DGT
Dental Technology Prosthetic	DPT
Dermatology & Syphilology	DST
Duplication Technic	DUT
Electrocardiography & Basal Metabolism	ELT
Epidemiology & Sanitation	EST
Electroencephalography	ENC
Fever Therapy	FTT
Low Pressure Chamber	LPC
Malariology	MAL
Medical Field Service	MFT
Medical Photography	PMT
Neuropsychiatry	NPT
Neuropsychiatry Clerical Procedures	NPC
Occupational Therapy	OT
Operating Room Technic	ORT
Pharmacy & Chemistry	PCT
Submarine Service	SUB
Physical Therapy	PHT
Property & Accounting	PAT
X-Ray	XRT
X-Ray & Photofluorography	XRP
Chemist	CHT
Dental Repairman	DRM
Embalmer	EMT
Medical Illustrator	MI
Orthopedic Appliance Mechanic	OAM
Optician	OPC
Optometrist	OPM
Chemical Warfare	CWT
*Dental Technician Prosthetic	DP
Podiatrist (Chiropodist)	POD
Radium Plaque Adaptometer Operator	RPA
Registered Pharmacist	RPH
Stenographer	STT
Sound Motion Picture	SMP
Acrylic Eye Illustrator	AEI
Spectacle Dispensers	SD
Physicial Education	QPE

*(DP) is a designator and is specially authorized by BuPers as an integral part of rate of pharmacist's mates who were in general previously qualified and designated DPT (see BuPers Circ. Ltr. 214-44).

2. Approximately 50 per cent of the total number of Hospital Corps ratings in the Navy have technical and special qualifications. When making a transfer of the service records of enlisted Hospital Corps, examine ratings carefully in order to record properly special qualifications on Standard Transfer Order.

3. All activities having such enlisted personnel qualified in medical-department technical specialties and special qualifications on board shall show them on page 4 of NavPers 625, by rate and specialty designator.

4. The foregoing is required to facilitate accounting for Hospital Corpsmen qualified in medical-department technical and special qualifications.

--BuPers. W. M. Fechteler.

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To:	All Ships (Except AP, APH and AH) and Stations.	BuShips FS/S37-1 (5817)
Subj:	Redesignation of "Mental Ward" to "Sick Bay Annex" in APA, AKA, AGC, and Others.	BuMed-PD(D):EB FS/S37-1
Ref:	(a) BuShips ltr C-AA/S37-1(459), C-EN28/A2-11, of 21 Oct 1944 to All Industrial Activities.	19 June 1945

1. Many ships in addition to AP, APH, and AH have spaces shown on plans and label plates as "Mental Ward." Except for AP, APH, and AH vessels, it was not intended that these spaces meet the standards required on troop transports as outlined in reference (a). These spaces on the subject classes should be redesignated as "Sick Bay Annex." Change of label plates should be accomplished by industrial activities concerned. Any work on vessels due to this change is chargeable to applicable IRNV Project Order for vessels within the new-construction period or to Title "K" for vessels beyond that period. No shipalt will be issued.

--BuShips. E. W. Mills. --BuMed. Ross T. McIntire.

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To: All Ships and Stations. BuMed-V-RMM
A3-3/EN10(H-9)

Subj: NavMed-H-9 (Aviation Medical Abstract), Establishment of. 23 Jun 1945

Refs: (a) Par. 2331, Manual of the Medical Department.
(b) Par. 2285(3), Manual of the Medical Department.
(c) Par. (c), app. D, Circ. Ltr. R, of 1 July 1940, Manual of the Medical Department.
(d) NavMed-H-3a(1943).

Encl: (A) Sample copy of NavMed-H-9 (Aviation Medical Abstract).

1. NavMed-H-9 (Aviation Medical Abstract) is herewith established and is effective 1 September 1945. It shall be permanently attached to the Health Record of all aviation personnel assigned to duty involving flying. The back of NavMed-H-3a (ref. (d)) shall not be used in the future to record the abstract of physical examinations of aviation personnel assigned to duty involving flying.

2. NavMed-H-9 is intended to provide medical officers with an adequate medical history for aviation personnel assigned to duty involving flying. This form provides a chronological record of aviation medical data concerning altitude training, night vision training, suspensions from flying (for medical reasons only), and a summary of physical examinations for flying.

3. Instructions for the proper use of the Navmed-H-9)(Aviation Medical Abstract) are as follows:

(a) Altitude training: Oxygen indoctrination, when given by the altitude training units, shall in each instance be entered in the spaces provided and signed by a medical officer. Under "Remarks" will be entered observations made on reactions to anoxia, decompression, and recompression.

(b) Night-vision training: Night vision instruction, when given by the night vision training units, shall in each instance be entered in the spaces provided and signed by a medical officer.

(c) Suspension from flying (for medical reasons only): An entry shall be made when the cause for suspension of flight duties is, in the opinion of the medical officer, of sufficient value to aid in the future evaluation of the individual's fitness for duty involving flying. Each entry shall be signed by a medical officer.

(d) Summary of physical examinations for flying:

(1) Aviation personnel classes (1) to (7), inclusive (par. 1539(a), MMD); Appropriate entries signed by a medical officer shall be made in the spaces provided when each NavMed-Av-1 is submitted to the Bureau of Medicine and Surgery.

(2) Aviation personnel classes (8) to (10), inclusive (par. 1539(a), MMD); An entry signed by a medical officer indicating the results of each examination to determine aviation personnel's fitness for duty involving flying shall be made in the spaces provided.

4. Upon permanent separation of an individual from aviation, the Aviation Medical Abstract (NavMed-H-9) will be forwarded to the Bureau of Medicine and Surgery.

5. To clarify the use of subject form the following changes in the Manual of the Medical Department are hereby directed:

(a) Reference (b), par. 2285(3), MMD, lines 10 and 11: Change "on the abstract for special qualifications when indicated" to "on the special duty abstract or aviation medical abstract when indicated."

(b) Reference (a), par. 2331, MMD, lines 5 and 6: Change "In the cases of special physical examinations for aviation, submarine, diving, etc." to "In the cases of physical examinations for special duties (other than aviation) such as submarine, diving, etc."

(c) Reference (c), par. (c): Add as last line "In each instance where a NavMed-Av-1 is submitted to the Bureau of Medicine and Surgery, an appropriate entry shall be made in the NavMed-H-9 (Aviation Medical Abstract).

(d) Reference (c), par. (d)(3): Add as last line "In each instance an appropriate entry shall be made in the NavMed-H-9 (Aviation Medical Abstract)."

(e) Reference (c), par. (d)(4)(ff), line 5: Change "special duty abstract" to "aviation medical abstract."

(f) Reference (c), par. (d)(5), line 9: Change "special duty abstract" to "aviation medical abstract."

(g) Reference (d), NavMed-H-3a (1943): To the heading on the back add "(OTHER THAN AVIATION)." Delete from the subhead the word "AVIATION."

6. NavMed-H-9 will be stocked at all naval medical supply depots and storehouses and will be listed in the medical supply catalog as follows:

Stock No.	NavMed No.	Item Title	Unit
S16-390	H-9	HEALTH RECORD (Aviation Medical Abstract)	Sheet

The subject form will be buff colored to facilitate identification.

--BuMed. Ross T. McIntire.

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(Enclosure (A), Aviation Medical Abstract, NavMed-H-9 (5-45) on following page.)

AVIATION MEDICAL ABSTRACT

NAVMED H-9 (5-45)

This Abstract will be retained in the Health Record

NAME (Surname)	FILE OR SERVICE NO.
(Christian Name(s))	
BIRTHPLACE	BIRTH DATE

ALTITUDE TRAINING

DATE	STATION	SIGNATURE OF MEDICAL OFFICER (in ink)
1.		
REMARKS		
2.		
REMARKS		
3.		
REMARKS		

NIGHT VISION TRAINING

TWO DIMEN.	THREE DIMEN.	DATE COMPLETED	STATION	SIGNATURE OF MEDICAL OFFICER (in ink)

SUSPENSION FROM FLYING

DATE	MEDICAL REASON	SIGNATURE OF MEDICAL OFFICER (in ink)
FROM		
TO		
FROM		
TO		
FROM		
TO		
FROM		
TO		
FROM		
TO		
FROM		
TO		
FROM		
TO		
FROM		
TO		

16—44669-1

SUMMARY OF PHYSICAL EXAMINATIONS FOR FLYING

DATE	PLACE	PURPOSE	RESULT—RECOMMENDATION (Defects—Waivers)	BUMED ACTION	SIGNATURE OF MEDICAL OFFICER

16—44669-1 GPO

CAPT. E.W. BROWN, MC USN.

BUREAU OF MEDICINE AND SURGERY,
NAVY DEPARTMENT,
WASHINGTON, D.D.

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